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INTRODUCTION
to the **TSD450**

Congratulations on the purchase of your Flo-Dynamics TSD450 automatic transmission fluid exchanging machine!

Simply put, this machine is the cleanest, safest, easiest, fastest, most thorough, and most cost-efficient method of fluid exchange ever devised. Suddenly, regular automatic transmission maintenance becomes a more realistic proposition. With the TSD450, you can exchange the transmission fluid either through the transmission cooler lines OR through the vehicle's dipstick. Transmission fluid exchanging is cleaner and easier than ever!

Transmission Fluid Exchange:
To attain the highest level of protection for internal transmission components and increase the transmission's life span to the maximum, it is recommended that the transmission's lubrication system is serviced every 15,000 miles (or according to the vehicle owner's manual). The Flo-Dynamics TSD450 exchanges virtually all of the used transmission fluid to new, without even requiring the transmission pan to be dropped. There is no spillage, and no mess.

• The TSD450 can be used practically anywhere – and with almost any vehicle.

• It is compact, mobile, and self-contained.

• It operates off the 12-volt battery of the vehicle being serviced.

• It does not require a pit, lift, or ramp.

• The TSD450 hooks up directly to one of the vehicle's transmission cooler lines for a transmission fluid exchange or through the dipstick.

• The ATF fluid exchange, from setup to finish, typically takes 15 minutes or less for inline mode, and 10 minutes or less for dipstick mode!

No wonder an ATF exchange is the most requested method of preventative automatic transmission maintenance today.

Please take time to read through this manual to familiarize yourself with the TSD450 before performing your first ATF exchange.

I. SAFETY INFORMATION

1.01 IMPORTANT SAFETY NOTICE

For your safety, read this manual thoroughly before operating your TSD450 unit. Your TSD450 unit is intended for use by properly trained, skilled professional automotive technicians. The safety messages presented below and throughout this user's manual are reminders to the operator to exercise care when using this unit. Before using your TSD450, always refer to and follow the safety messages and applicable service procedures provided by the manufacturer of the vehicle being serviced.

• Read All Safety Instructions

Read, understand and follow all safety messages and instructions in this manual. Safety messages in this section of the manual contain a signal word with a three-part message and, in some instances, an icon.

• Signal Words

The signal word indicates the level of the hazard in a situation:

⚠ DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or to bystanders.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or to bystanders.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor injury to the operator or to bystanders.

IMPORTANT

Indicates a situation which, if not avoided, may result in damage to the TSD450 or the vehicle being serviced.

• Safety Messages

Safety messages in this section contain three different type styles:

- Normal type states the hazard.
- **Bold type** states how to avoid the hazard.
- *Italic type* states the possible consequences of not avoiding the hazard.

• Safety Symbols

A safety symbol, when present, gives a graphical description of the potential hazard, and how to avoid the hazard:

Risk of Fire

Risk of Explosion

Risk of Entanglement

Dangerous Fumes

Do Not Pull or Move

Read Instructions Before Use

Mandatory Eye Protection

Mandatory Protective Gloves

Mandatory Protective Clothing

1.02 IMPORTANT SAFETY INSTRUCTIONS

⚠ DANGER

Engine exhaust contains toxic gases.
• Vent vehicle's exhaust away from work area.
• Do not breathe exhaust.
Exhaust gases will cause injury or death.

⚠ WARNING

Improper use and operation.
• Read, understand and follow all safety messages and operational procedures in this manual before operating the Flo-Dynamics TSD450.
• This equipment should be operated only by qualified personnel.
• Use this equipment only as described in this manual.
Improper use and operation of this product can result in injury.

⚠ WARNING

Engine systems can malfunction expelling fuel, oil vapors, hot steam, hot toxic exhaust gases and other debris.
• Wear safety goggles and protective clothing, user and bystander.
Engine systems that fail can cause serious injury.

⚠ WARNING

Risk of expelling pressurized fluids.
• Wear safety goggles and protective clothing, user and bystander.
• Verify that engine and machine are off before connecting or disconnecting cooler lines and adapter hoses.
• Always unplug the machine from its power source when not in use.
• Keep the service hoses away from hot or moving engine parts. Hoses can split or burst causing fluid to be expelled.
• Tighten all connections properly. Insufficient or excessive torque can result in fluid leakage.
• Avoid contact with automatic transmission or power steering fluid.
• Treatment methods are as follows:
Eyes: Flush eyes with plenty of water.
Skin: Wash with soap and water.

Inhalation: Move to uncontaminated area.
Ingestion: If large amount, get medical attention.
If any irritation persists, get medical attention.

• Dispose of used fluid according to environmental laws and regulations.

Although automatic transmission and power steering fluid pose no significant health hazards, some individuals may experience adverse reactions upon contact. Pressurized fluid can cause serious injury.

⚠ WARNING

Risk of unexpected vehicle movement.

• Block drive wheels before starting vehicle's engine to begin an exchange.
• Unless instructed otherwise, set parking brake and put gear selector in park.
• Do not leave a running vehicle unattended.

A moving vehicle can cause injury.

⚠ WARNING

Engine has moving parts. Risk of entanglement.

• Do not place tools on fenders or other places in engine compartment.
• Keep yourself, clothing, battery cables and service hoses clear of moving parts such as fan blades, belts and pulleys.

Contact with moving parts can cause injury.

⚠ WARNING

Risk of fire or explosion.

• Do not operate the TSD450 in the vicinity of open containers of flammable liquids such as gasoline.
• Keep hoses and jumper cables away from heat sources and sharp edges.
• Do not operate equipment with damaged cords or hoses until they have been examined by a qualified serviceman.

Fire or explosion can cause injury.

⚠ WARNING

Risk of fire or explosion. Gases produced by a battery are highly explosive.

• Wear safety goggles and protective clothing, user and bystander.
• This machine is equipped to operate on 12-volt DC power only. A power source greater than this can result in serious injury to the user as well as damage to the machine.
• Do not smoke, place metal tools on battery or allow a spark or flame in vicinity of battery.
• Clean battery terminals before hooking the machine's battery clips to them. During cleaning, keep airborne corrosion from eyes, nose and mouth.

• Be sure both battery cables are tightly connected to the battery terminals as instructed before proceeding with a fluid exchange.
• Never remove battery cables from the battery terminals while the machine is operating. Only use the "EMERGENCY STOP" button located on the control panel to stop an exchange.
Battery explosion can cause injury.

⚠ WARNING

Battery acid is a highly corrosive sulfuric acid.
• Wear safety goggles and protective gloves, user and bystander.
• Have plenty of fresh water and soap nearby. If battery acid contacts skin, clothing, or eyes, flush exposed area with soap and water for 10 minutes.
• While cleaning battery's terminals, keep airborne corrosion from eyes, nose and mouth.
• Do not touch eyes while working near battery.
Battery acid can burn eyes and skin.

⚠ WARNING

Risk of burns.
• Wear gloves when working near hot engine components.
• Do not touch hot exhaust systems, manifolds, engines, radiators, etc.
• The automatic transmission fluid coming from the vehicle along with some of the machine's components that the fluid comes into direct contact with (i.e. external: hoses and quick-disconnect fittings; internal: hoses and all fittings) may reach temperatures uncomfortable to the touch. Exercise caution in avoiding contact with these items.
Hot components can cause injury or discomfort.

⚠ CAUTION

Ratchet mechanisms and tools may slip or break if dirty. Mismatched or partially worn parts can cause ratchet or any tool to slip or break.
• Frequently inspect and clean any tools used, and lubricate all non-sealed ratchet mechanisms with light oil.
• Do not replace worn parts individually. If adapter hose fittings become worn, see "Appendix C – Replacement Parts" to order new hoses.
• The use of any other accessories not specified in this manual may create a hazard.
Tools that slip or break can cause injury.

⚠ CAUTION

Risk of injury.

• This equipment should be operated by qualified personnel only.
• Use this equipment only as described in this manual.
• Always unplug the machine from its power source when not in use.
• Loop the power cord loosely in its proper location when machine is not in use.
• Do not operate equipment with a damaged battery cables or hoses, or if the equipment has been dropped or damaged, until it has been examined by a qualified service representative.
• Care should be taken to arrange the battery cables and service hoses so that they will not be tripped over or pulled.
• Never pull on the power cables or service hoses to transport the TSD450. Damage may occur to these components, or machine may tip over.
• Keep area of operation clear of unnecessary tools and equipment. Utilize recessed tool storage areas on the top of the machine.
• Never leave the machine running unattended.
• The TSD450 is not designed for any other purpose than the exchanging of automatic transmission and power steering fluid.
Operation of your TSD450 unit by anyone other than qualified personnel may result in injury.

IMPORTANT

Risk of equipment damage.

• Flushing high mileage cars that have not been previously serviced can cause operating problems in the transmission.
• Connect battery cables to a 12-volt power source only (i.e. vehicle's battery).
• Servicing, transporting, or storing this machine in an attitude other than the normal operating position can result in fluid spillage and/or component damage.
• Use only the manufacturer's recommended attachments.
• The Flo-Dynamics TSD450 is fully automatic. Refer to your control panel at all times.
• Never pull on the power cables or service hoses to transport the TSD450. Damage may occur to these components, or machine may tip over.
• Periodically clean the machine by wiping down with a clean, soft, dry cloth.
Improper operation of equipment may result in damage to machine or components.

SAVE AND FOLLOW THESE INSTRUCTIONS!

II. SYSTEM FEATURES & SPECIFICATIONS

2.01 FEATURES

Mechanical Features

- Accurate sensor technology allows optimum fluid level to be maintained in vehicle's transmission.
- Two in-line 22-micron absolute fluid filters capture microscopic particles and contaminants.
- Numbered quick-disconnect hoses with adapters save time in identifying the proper hoses for the application
- Easy to use adapters allow quick hookup to virtually any automobile make and model, saving time and money.
- Clear service hoses give visual confirmation of new and used fluid movements.
- Ergonomically correct working height means greater productivity, less stress and strain.
- Durable roto-cast polyethylene body and tanks prevent vehicle damage. The unit is also lightweight and durable, for easier handling and longer life.
- Large 5-inch locking caster wheels make machine easy to maneuver.
- Easy-access service panel provides hassle-free operations for greater efficiency.

Electronic Features

- Self-contained battery cables hook up to the vehicle's 12-volt battery
- Automatic monitoring of fluid in new and used fluid tanks assures safe operation
- Accurate sensor technology
- LCD counter display with cumulative ATF options
- Ability to exchange anywhere from 1 to 20 quarts in 1 quart intervals
- Fluid measurements can be changed from quarts to liters
- Drain used fluid tank (no need to tip machine upside-down)
- Drain new fluid tank
- Ability to pause machine during exchange to change transmission filter
- Battery backup allows machine to resume where it left off should it lose power
- Add new fluid to transmission in 2/10 quart increments (approx. 1/8" on the dipstick)
- Remove fluid from transmission in 2/10 quart increments (approx. 1/8" on the dipstick)
- Cycle valves feature allows you to electronically clean out valves
- Totalizer check (indicates lifetime use)
- Interactive menu:
  - "Auto Prime" feature automatically primes the system
  - Indicate new fluid volume
  - Indicate used fluid capacity
  - Read battery voltage

2.02 DIMENSIONS & TECHNICAL SPECIFICATIONS

DIMENSIONS:

39" Tall
24 3/4" Wide
25" Deep

Service Hoses:
10’ outside of machine

Wheels:
5” locking casters (front)
5” casters (back)

Weight:
95 lbs

TECHNICAL SPECIFICATIONS:

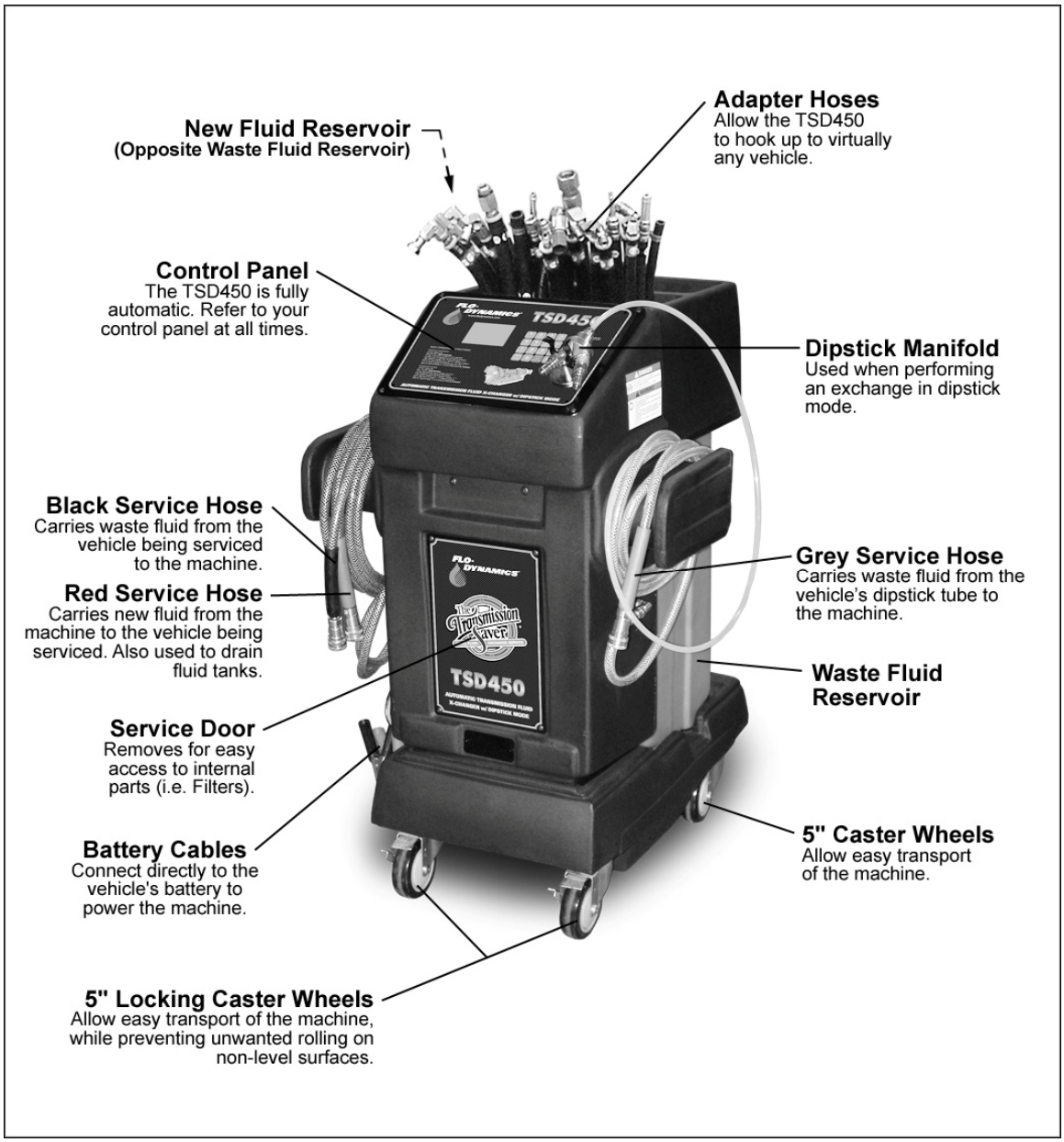
Power:
12-Volt DC from vehicle battery

Fluid Sensors:
Accurate sensor technology

Filters:
22-micron absolute fluid filters

Operating Temperature:
65º to 150ºF (15º to 65ºC)

2.03 MACHINE OVERVIEW


New Fluid Reservoir
(Opposite Waste Fluid Reservoir)
Adapter Hoses
Allow the TSD450 to hook up to virtually any vehicle.
Control Panel
The TSD450 is fully automatic. Refer to your control panel at all times.
Dipstick Manifold
Used when performing an exchange in dipstick mode.
Black Service Hose
Carries waste fluid from the vehicle being serviced to the machine.
Red Service Hose
Carries new fluid from the machine to the vehicle being serviced. Also used to drain fluid tanks.
Grey Service Hose
Carries waste fluid from the vehicle's dipstick tube to the machine.
Waste Fluid Reservoir
Service Door
Removes for easy access to internal parts (i.e. Filters).
Battery Cables
Connect directly to the vehicle's battery to power the machine.
5" Caster Wheels
Allow easy transport of the machine.
5" Locking Caster Wheels
Allow easy transport of the machine, while preventing unwanted rolling on non-level surfaces.
TSD450

III. OPERATING PROCEDURES

3.01 SUGGESTED ADDITIONAL TOOLS

⚠ CAUTION

• Frequently inspect and clean any tools used, and lubricate all non-sealed ratchet mechanisms with light oil.
• The use of any other accessories not specified in this manual may create a hazard.
• Read, understand and follow Safety Instructions in the front pages of this manual and on product safety labels.

Line Wrenches
3/8”
7/16”
1/2”
9/16”
5/8”
11/16”
3/4"

End Wrenches
3/8”
7/16”
1/2"
9/16”
5/8”
11/16”
3/4”

Hex Wrenches
1/8”
11/16”

Nut Drivers (American)
3/16”
1/4”
5/16”
3/8”
7/16”

Nut Drivers (Metric)
6 mm
8 mm
9 mm
10 mm
11 mm
12 mm
13 mm
14 mm

Filter Band Clamp
For replacing canister filters

Metric End or Line Wrenches
10 mm
11 mm
12 mm
13 mm
14 mm
15 mm
16 mm
17 mm
18 mm
19 mm
20 mm

Screwdrivers

Phillips	***Standard***
1 long	*1 long*
1 short	*1 short*

⚠ DANGER

• Vent vehicle's exhaust away from work area.
• Do not breathe exhaust.
• Read, understand and follow Safety Instructions in the front pages of this manual and on product safety labels.

⚠ WARNING

• Wear safety goggles and protective clothing, user and bystander.
• Do not operate the TSD450 in the vicinity of open containers of flammable liquids such as gasoline.
• This machine is equipped to operate on 12-volt DC power only.
• Do not smoke, place metal tools on battery or allow a spark or flame in vicinity of battery.
• Clean battery terminals before hooking the machine's battery clips to them. During cleaning, keep airborne corrosion from eyes, nose and mouth.
• Keep yourself, clothing, battery cables and service hoses clear of moving parts such as fan blades, belts and pulleys.
• Unless instructed otherwise, set parking brake and put gear selector in park.
• Do not leave a running vehicle unattended.
• Keep the service hoses away from hot or moving engine parts. Hoses can split or burst causing fluid to be expelled.
• Tighten all connections properly. Insufficient or excessive torque can result in fluid leakage.

⚠ CAUTION

• Use this equipment only as described in this manual. Use only the manufacturer's recommended attachments.
• Care should be taken to arrange the battery cables and service hoses so that they will not be tripped over or pulled.
• The TSD450 is fully automatic. Refer to your control panel at all times.

⚠ CAUTION

•Flushing high mileage cars that have not been previously serviced can cause operating problems in the transmission.
• Never pull on the power cables or service hoses to transport the TSD450. Damage may occur to these components, or machine may tip over.
• Servicing, transporting, or storing this machine in an attitude other than the normal operating position can result in fluid spillage and/or component damage.

3.02 BASIC OPERATING INSTRUCTIONS

IMPORTANT

Turn vehicle's A/C system OFF before starting an exchange.
New transmission fluid MUST be 65°F or above for optimal performance.

FIRST TIME OPERATION *(Priming the System)*

(Only necessary when machine is received, before first operation.)
System must be primed before first use.

1. Connect machine to battery
2. Make sure fluid is in new fluid tank
3. Connect the red and black service hoses together using the adapters
4. Press 0
5. Press 5
6. Press START

TRANSMISSION FLUID EXCHANGE

Dipstick Exchange

1. Connect battery leads.
2. Press 2 to select "Dipstick Exchange".
3. Connect red & grey service hoses to chrome manifold.
4. Insert nylon tube down ATF dipstick tube, being cautious not to insert too far.
5. With engine off, select quantity using the ▲ and ▼ buttons, and press START.
6. To skip cleaning process, press "1" and continue to step 10.

Cleaning Process (Optional)

7. Press "2" for 5 Minute Cleaning, or "3" for 10 Minute Cleaning.
   When adding chemicals, add directly to the vehicle for best results.
8. Press "START" to begin cleaning process.
9. When cleaning process is complete, shut off engine.

10. Follow instructions on screen and press START. Exchange will begin. *Once the exchange has begun, press the STOP button once to pause the machine. Press START to resume from pause. Press STOP a second time to cancel the exchange.*
11. After first cycle completes, start vehicle's engine and press START.
12. After second cycle completes, the unit will beep and display "Complete".
13. You may top off or remove fluid by using the "ADD FLUID" or "REMOVE FLUID" buttons.
14. Press 0 to return to the main menu.

Inline Exchange

1. Connect battery leads.
2. Locate and disconnect the most easily accessible hose or fitting at the radiator end of the transmission cooler system.
3. Refer to *Section 4.01- Adapter Hoses* to identify the specific adapter hoses required for the vehicle, and attach adapter hoses to vehicle.
4. Connect red & black service hoses to quick-disconnect adapters on ends of adapter hoses.
5. Press 1 to select “Inline Exchange”.
6. Select quantity using the ▲ and ▼ buttons, and press START.
7. Press "1" for No Cleaning, "2" for 5 Minute Cleaning, or "3" for 10 Minute Cleaning. **When adding chemicals, add directly to the vehicle for best results.**
8. Start vehicle’s engine, and press START to confirm choices. Exchange will begin. *Once the exchange has begun, press the STOP button once to pause the machine. Press START to resume from pause. Press STOP a second time to cancel the exchange.*
9. When exchange is finished, the unit will beep and display “Complete”.
10. You may top off or remove fluid by using the “ADD FLUID” or “REMOVE FLUID” buttons.
11. Press 0 to return to the main menu.

3.03 ADDITIONAL INSTRUCTIONS

Add 1 Quart
1. Press 0
2. Press 3

Remove 1 Quart
1. Press 0
2. Press 4

Drain Waste Fluid Tank
1. Connect to battery
2. Connect open end adapter to red hose. Make sure all other hoses are disconnected
3. Press 0
4. Press ▼
5. Press 7
6. Unit will shut off when complete

Drain New Fluid Tank
1. Connect to battery
2. Connect open end adapter to red hose. Make sure all other hoses are disconnected
3. Press 0
4. Press ▼
5. Press 6
6. Unit will shut off when complete

Prime the Machine
1. Connect to battery
2. Make sure fluid is in new fluid tank
3. Connect the red and black service hoses together using the adapters
4. Press 0
5. Press 5
6. Press START

Switch Hoses
1. Turn vehicle off
2. Switch hoses
3. Restart vehicle
4. Press START
5. Press 3

Shift to Neutral
1. Shift vehicle to neutral
2. Press START

CUSTOMER SERVICE CONTACT INFORMATION

If you experience any problems or have any questions, call technical support at:

1-800-303-5874

IV. HOSES & ADAPTERS

4.01 ADAPTER HOSES

STANDARD HOSES

-Green- 5/8”-18 [F]
941801- Hose #**51** SAE 45° Flare - Swivel
(Mates with #52) *(Chrysler - 1993 and Newer)*

-Green- 5/8”-18 [M]
941802- Hose #**52** SAE 45° Flare
(Mates with #51) *(Chrysler)*

-Blue- 5/8”-18 [M]
941803- Hose #**53** SAE 45° Flare - Swivel
(Mates with #57) *(General Motors with 3/8" Tube Diameter Lines - All Years)*

-Black- 3/8” Diameter Hose [F]
941805- Hose #**55** Open End Hose w/Clamp
(Mates with Step Fitting) *(Import - 1987 and Newer)*

-Blue- 5/8”-18 [F]
941807- Hose #**57** SAE 45° Inverted
(Mates with #53) *(General Motors with 3/8” Tube Diameter Lines - 1997 and Newer)*

-Black- 1/2” Diameter Hose [F]
941809- Hose #**59** Open End Hose w/Clamp
(Mates with Step Fitting) *(Import)*

-Black- 5/16” Diameter Hose [F]
941813- Hose #**63** Open End Hose w/Clamp
(Mates with Step Fitting) *(Import)*

-Green- 1/4”-18 [M]
941815- Hose #**65** NPTF
(Mates with #75) *(Jeep Cherokee- 1980-1986)*

-Red- 1/2”-20 [F]
941816- Hose #**66** SAE 45° Inverted
(Mates with #67) *(Chrysler, Ford Aerostar, Jaguar, Mercedes,& Cadillac-1985 and Newer)* * Needs Ford Slide Tool 940140 for Aerostar / Windstar

-Red- 1/2”-20 [M]
941817- Hose #**67** SAE 45°
(Mates with #66) *(Chrysler and Ford)*

-Red- 5/8”-18 [M]
941818- Hose #**68** SAE Inverted - Swivel
(Mates with #69) *(Ford With Large Nut Adapter - 1980 and Newer)*

-Red- 5/8”-18 [F]
941819- Hose #**69** SAE Inverted
(Mates with #68) *(Ford)*

-Blue- 1/2”-20 [M]
941820- Hose #**70** SAE 90° Inverted - Swivel
(Mates with #71) *(General Motors with 5/16" Tube Diameter Lines - All Years)*

-Blue- 1/2”-20 [F]
941821- Hose #**71** SAE Inverted
(Mates with #70) *(General Motors & Ford Expedition)*

-Red- 1/2”-20 [F]
941822- Hose #**72** SAE Inverted
(Mates with #73) *(Ford)*

-Red- 1/2”-20 [M]
941823- Hose #**73** SAE 90° Inverted - Swivel
(Mates with #72) *(Ford 5/16" Small / Long Nut Adapter - 1980 and Newer)*

-Green- M14 x 1.5 [F]
941825- Hose #**75** Swivel O-ring
(Mates with #65) *(Jeep Cherokee, Ford Escort - 1980-1986)*

-Red- M14 [F]
940874- Hose #**78** Banjo Fitting
(Mates with #79) *(Ford Escort – 1994 and Newer)*

-Red- M14 x 1.5 [M]
940875- Hose #**79** Bolt w/ 2 Washers
(Mates with #78) *(Ford Escort - 1994 and Newer)*

-Black- 1/4” [M]
941828- Hose #**80** Universal Bump Fitting
(Mates with #81) *(Import)*

-Black- 1/4” Diameter Hose [F]
941829- Hose #**81** Open End Hose w/Clamp
(Mates with #80) *(Import)*

-Black- 5/16” [M]
941830- Hose #**82** Universal Bump Fitting
(Mates with #63) *(Infiniti, Lexus, and BMW - 1980 and Newer)*

-Black- 3/8" [M]
941831- Hose #**83** Universal Bump Fitting
(Mates with #55) *(Toyota, Nissan, Honda, Ford and Chrysler - 1975 and Newer)*

-Black- 1/2" [M]
941832- Hose #**84** Universal Bump Fitting
(Mates with #59) *(Toyota, Nissan and Honda - 1980 and Newer)*

-Green- 9/16"-18 [M]
941835- Hose #**87** JIC 37° Flare - Inverted
(Mates with #88) *(Dodge Durango/Dakota - All Years)*

-Green- 9/16"-18 [F]
941836- Hose #**88** JIC 37° Flare - Swivel
(Mates with #87) *(Dodge Durango/Dakota - All Years)*

-Black- 3/4"-16 [M]
941841- Hose #**89** SAE O-Ring
(Mates with #90) *(Chevy DuraMax w/Allison Transmission – 2001 & Newer)*

-Black- 3/4"-16 [F]
941842- Hose #**90** SAE O-Ring Adapter
(Mates with #89) *(Chevy DuraMax w/Allison Transmission – 2001 & Newer)*

-Red- 3/4"-18 [M]
941960- Hose #**91**
(Mates with #92) *(Ford F-250 & F-350 w/ Torqueshift Transmission)*

-Red- 3/4"-18 [F]
941961- Hose #**92**
(Mates with #91) *(Ford F-250 & F-350 w/ Torqueshift Transmission)*

-Red- 5/8-18 [M]
941080- Hose #**93** *(Ford Focus / Mercury Mystique)*
(Mates with #94)

-Red- 5/8-18 [F]
941081- Hose #**94** *(Ford Focus / Mercury Mystique)*
(Mates with #93)

-Yellow- 3/4"-18 [M]
940388- Hose #**124** 90° Inverted SAE 45° - Swivel
(Mates with #142) *(Ford Torqshift / 250SD / 550SD / Econoline / Excursion)*

-Yellow- 3/4"-18 [F]
940389- Hose #**142** Inverted SAE 45° Rigid - Straight
(Mates with #124) *(Ford Torqshift / 250SD / 550SD / Econoline / Excursion)*

-Yellow- 5/8" Diameter Hose [F]
941900- Hose #**149** Open End Hose w/Clamp
(Mates with 5/8" Adapter) *(Chevy DuraMax w/Allison Transmission - 2003 & Newer)*

941178
(TSPS & TSDPS Only)

1/2" Diameter PSX Y-Adapter
(All Vehicles)

ALLISON HOSES (Optional)

941844- Hose **#134**
(Mates with #135)

-Yellow- **#16 PTT Thread**
[Male]

941845- Hose **#135**
(Mates with #134)

-Yellow- **#16 PTT 30° Swivel**
[Female]

941846- Hose **#136**
(Mates with #137)

-Yellow- **#12 SAE**
[Male]

941847- Hose **#137**
(Mates with #136)

-Yellow- **#12 SAE**
[Female]

941848- Hose **#138**
(Mates with #139)

-Yellow- **#16 JIC**
[Female]

941849- Hose **#139**
(Mates with #138)

-Yellow- **#16 JIC**
[Male]

941850- Hose **#140**
(Mates with #141)

-Yellow- **#10 JIC**
[Female]

941851- Hose **#141**
(Mates with #140)

-Yellow- **#10 JIC**
[Male]

941893- Fitting
(Mates with #143)

#12 ORFS
[Male]

941894- Hose **#143**
(Mates with 941893 Fitting)

-Yellow- **#12 ORFS**
[Female]

941895- Hose **#144**
(Mates with #145)

-Yellow- **#12 JIC**
[Male]

941896- Hose **#145** *-Yellow-* **#12 JIC Swivel** [Female]
(Mates with #144)

941897- Hose **#146** *-Yellow-* **1 1/16-1 w/ O-Ring** [Female]
(Mates with #147)

941898- Hose **#147** *-Yellow-* **1 1/16-1 Flat Face** [Male]
(Mates with #146)

941903- Hose **#152** *-Yellow-* **#10 ORFS** [Female]
(Mates with #153)

941904- Hose **#153** *-Yellow-* **#10 ORFS** [Male]
(Mates with #152)

4.02 **ADAPTERS**

The following adapters allow quick and easy hookup to virtually any vehicle make and model.

940328
1/2” Adapter

942163S
GM Adapter

942162
Quick Disconnect Tool

941899
5/8” Duramax Adapter

940329
3/8” Adapter

940334
5/16” Adapter

940831
Master Hose Connector

941910
3/8” Ford Adapter

942169
5/8” Medium GM Adapter

941923
1/2” Adapter

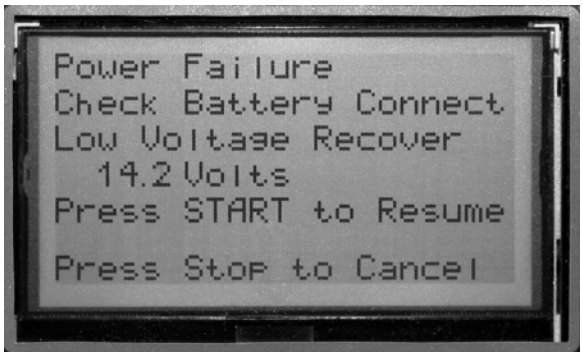
941925
3/8” Adapter

941966
Slider Pin Adapter (Optional)

V. TROUBLESHOOTING & MAINTENANCE

5.01 COMMON PROBLEMS / SOLUTIONS

Problem: *"Power Failure" screen displays*

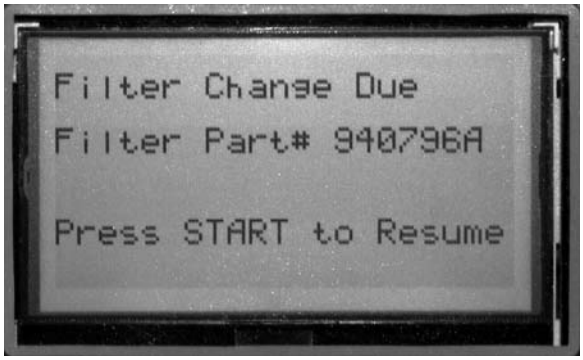


Solution 1: Check battery connection. Make sure there are no loose connections, and the machine's battery clips are not reversed. Remove all corrosion from the battery terminals. Make sure vehicle's A/C system is turned off.

Solution 2: The vehicle's battery is not putting out enough voltage to run the machine. Connect the machine to a better 12V power source. Stand-alone shelf batteries will not work.

5.02 MAINTENANCE PROCEDURES

• Replace Canister Filters *(Part#: 940796A)* **when machine prompts you to do so:**



Use a standard filter band clamp tool to unscrew old filters, and replace them with new filters. Make sure new filters are on tight.

• Clean Waste Fluid Screen (Located in bottom of recessed hose tray area)
This helps eliminate surface tension caused by debris and contamination from the air. Using a sharp pick, remove screen. Clean using degreaser and brush, and blow out with air compressor.

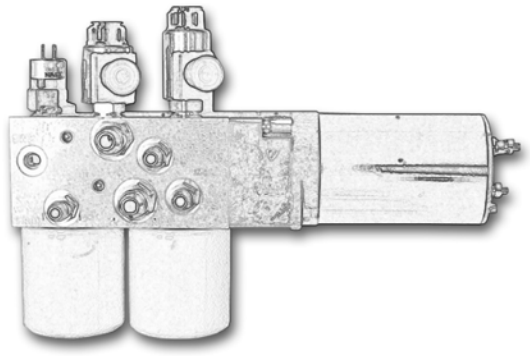
• Periodically Wipe Down Exterior using a soft, damp cloth.

VI. REPLACEMENT PARTS

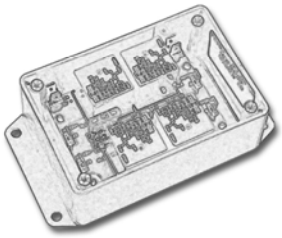
6.01 REPLACEMENT PART LIST

Part #	Description
944002	Control Panel w/ Elec. Board & Label
940307	Battery Cable Assembly
941617W	Motor Control Box
940474	Sensor Rod
941225	5/8" Fluid Tube
941226	Fluid Tube Elbow Fitting
940468	Manifold / Pump Assembly
940843	Pressure Switch *(Factory preset to 6 psi)*
940839	3/2 Solenoid Valve [Short] (S2)
940840	3/2 Solenoid Valve [Tall] (S1)
940841	Coil with Spade Connector [Short] (S2)
940842	Coil with Spade Connector [Tall] (S1)
R940775	Hose Kit
H940772	Hose Tray
941220	Hose Rack
940831	Master Hose Connector
940785	Service Hose (Black)
940786	Service Hose (Red)
941728	Service Hose (Grey)
941716W	Adapter Manifold Assembly
941708	Dipstick Reducer Hose
R940750	Chassis
941205	Console
R940752	Top Sink
942113	Tank Cap
941202	Tank Red New
941203	Tank Red Used
941705W	Service Panel w/ Label
R942118	Locking Caster Wheel
R942137	Caster Wheel
940796A	Canister Filter
R942150	Used Fluid Screen *(1 1/4" Diameter)*
941785	Operations Manual
941784	Quick Start Instructions
941783	Quick Start Instructions: *Additional Functions*
941921	Universal Hose Chart

6.02 REPLACEMENT PART ILLUSTRATIONS



940468
Manifold / Pump Assembly



941617W
Motor Control Board

940474
Sensor Rod

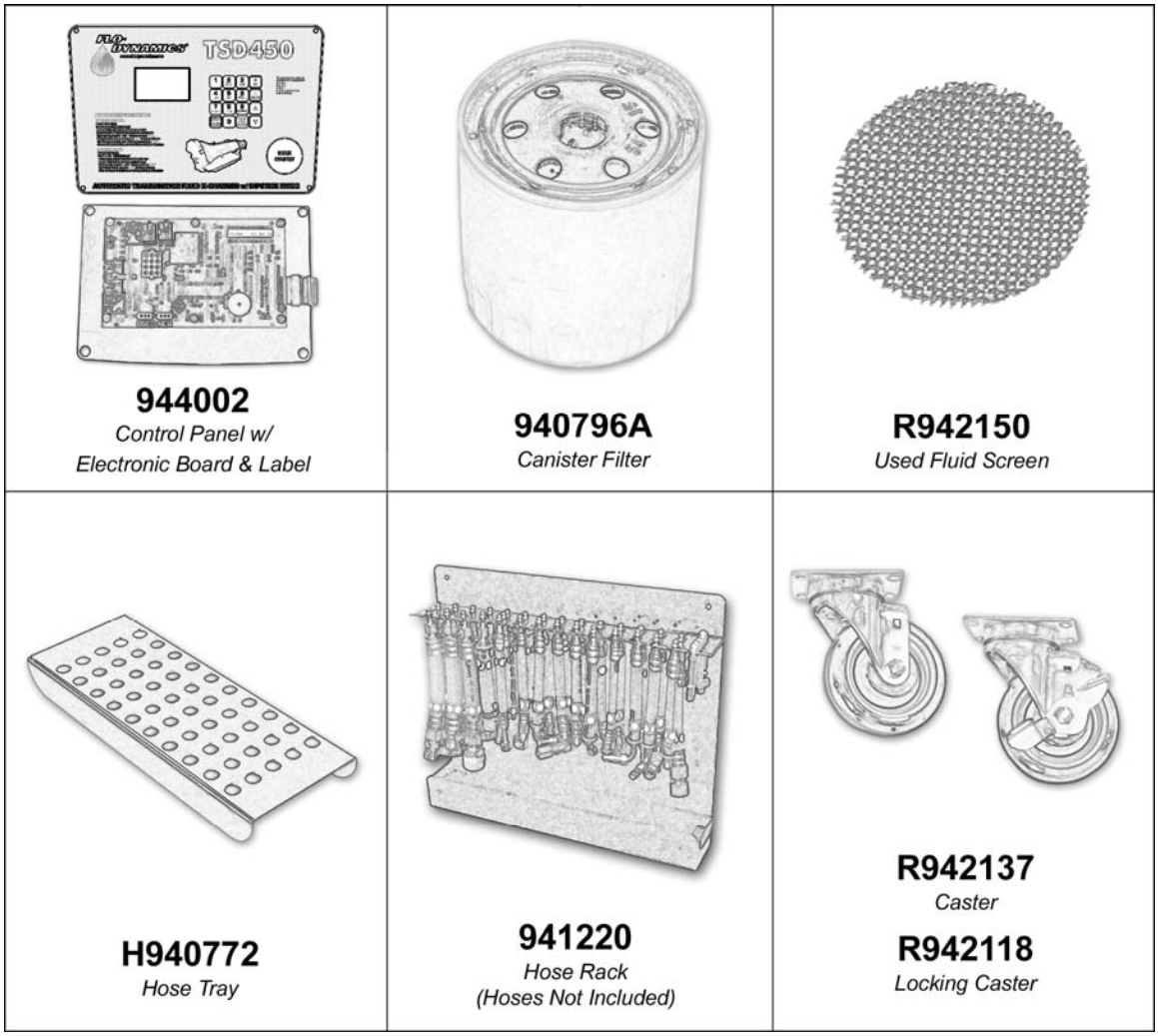
941225
5/8" Fluid Tube

941226
Fluid Tube Elbow Fitting

940843
Pressure Switch

940839
3/2 Solenoid Valve [Short] (S2)
940840
3/2 Solenoid Valve [Tall] (S1)

940841 or 940842
Coil with Spade Connector Short (S2) or Tall (S1)



6.03 ORDERING INFORMATION

To order replacement parts for the Flo-Dynamics TSD450, call:

1-800-303-5874

LIMITED ONE (1) YEAR WARRANTY

Flo-Dynamics TSD450

Flo-Dynamics warrants only to the original Purchaser that under normal use, care and service, the Equipment (except as otherwise provided herein) shall be free from defects in material and workmanship for one year from the date of original invoice. External hoses, remote control modules, adapters and all other attachments, supplies and consumables (except as otherwise provided herein) are warranted for 90 calendar days from the date of original invoice. Filter elements are not warranted. Printed circuit boards purchased from, but not installed by Seller are not warranted.

SELLER'S OBLIGATIONS UNDER THIS WARRANTY ARE LIMITED SOLELY TO THE REPAIR OR, AT SELLER'S OPTION, REPLACEMENT OF EQUIPMENT OR PARTS WHICH TO SELLER'S SATISFACTION ARE DETERMINED TO BE DEFECTIVE AND WHICH ARE NECESSARY, IN SELLER'S JUDGEMENT, TO RETURN THE EQUIPMENT TO GOOD OPERATING CONDITION. NO OTHER WARRANTIES EXPRESS OR IMPLIED OR STATUTORY, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY AND ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED.

This warranty does not cover (and separate charges for parts, labor and related expenses shall apply to) any damage to, malfunctioning, inoperability or improper operation of the Equipment caused by, resulting from or attributable to (A) abuse, misuse or tampering; (B) alteration, modification or adjustment of the Equipment by anyone other than Seller's authorized representatives; (D) improper or negligent use, application, operation, care, cleaning, storage or handling; (E) fire, water, wind, lightning or other natural causes; (F) adverse environmental conditions, including, without limitation, excessive heat, moisture, corrosive elements, or dust or other air contaminants, radio frequency interference, electric power failure, power line voltages beyond those specified for the equipment, unusual physical, electrical or electromagnetic stress, and/or any other condition outside of Seller's environmental specifications; (G) use of the Equipment in combination or connection with other equipment, attachments, supplies or consumables not manufactured or supplied by Seller; or (H) failure to comply with any applicable federal, state or local regulation.

Repairs or replacements qualifying under this Warranty will be performed on regular business days during Seller's normal working hours within a reasonable time following Purchaser's request. **All requests for Warranty service must be made during the stated Warranty period.** This warranty is non-transferable.